

Testimony to the Committee on International Relations' Subcommittee on
Africa, Global Human Rights and International Operations

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Chairman Smith, distinguished members of the Subcommittee on Africa, Global Human Rights and International Operations, my name is Dr. Karen Rheuban. I serve as Professor of Pediatrics, Senior Associate Dean for External Affairs and Medical Director of the Office of Telemedicine at the University of Virginia Health System in Charlottesville.

“Without health, there is no happiness. An attention to health, then, should take the place of every other object.” Eloquently articulated in 1787 by our founder, Thomas Jefferson, those words remain equally relevant in our contemporary world. Health – both physical and emotional – is a core tenet of human happiness. Outreach efforts to prevent and mitigate disease and alleviate suffering can serve as a foundation for collaboration amongst people of all cultures and nations. Advanced technologies offer a tool to enhance and sustain those collaborations and strengthen our ability to respond to global threats from pandemics and to provide disaster relief. However, without significant additional federal funding and coordination amongst key federal agencies, academic health centers, non government and international organizations, we have only scratched the surface of what can be accomplished.

On behalf of the University of Virginia, it is an honor and a privilege to provide testimony that speaks to the role of telemedicine in the delivery of healthcare and health related educational services to further collaboration transcending geographic boundaries.

Telecommunications have long played a role in humanitarian relief and medical outreach, be it via the telephone, ham radio, fax, the internet or video-teleconferencing technologies delivered over terrestrial, satellite or wireless connectivity. The ever increasing global deployment of broadband communications services now can facilitate the delivery of instantaneous and carefully coordinated culturally sensitive health care .

The telemedicine program at the University of Virginia began in 1992 with a pilot initiative that linked the King Faisal Hospital in Riyadh, Saudi Arabia with our health professionals in Charlottesville, both with physician exchange and the incorporation of interactive satellite communications services. Based on that initial experience, we strove to integrate technology to provide care in rural Virginia, where patients face the immense burdens of travel for access to locally unavailable specialty healthcare services.

In 1995, the University of Virginia Telemedicine program and the Southwest Virginia Alliance for Telemedicine were established to enhance access to specialty healthcare services and health related education for distantly located patients and health professionals. We initially selected sites in Appalachian communities in which we had established relationships and where we had hosted outreach clinics for many years. The program expanded quickly, supported by federal grants from the US Department of Commerce, the US Department of Agriculture, the Office for the Advancement of Telehealth, state funds and corporate and foundation grants and gifts.

We currently serve as the hub of a network of 60 sites which include community hospitals, a Veterans Administration hospital, federally qualified health centers, rural clinics, schools, health department clinics and a number of prisons in the Commonwealth of Virginia. To date, through this network, we have facilitated more than 8400 live interactive clinical consultations and follow-up visits linking distantly located patients with our University of Virginia health professionals representing 31 different medical and surgical subspecialties. These services are provided on a scheduled basis or emergently, as needed, at any time, day or night. In addition, we have provided many more thousands of radiographic interpretive services through our teleradiology program. We have saved lives, supported timely interventions, and spared patients unnecessary travel and expensive transfer where feasible.

As examples, through these linkages, our dermatologists have diagnosed skin lesions ranging from drug allergies to flesh-eating streptococcal infection. Our emergency physicians have evaluated and treated snake bites and drug overdoses, and we in pediatric cardiology regularly diagnose and when necessary, remotely manage infants with life-threatening congenital heart defects.

Our gynecologic oncologists supervise a nurse practitioner located six hours from Charlottesville as she performs cervical biopsies on patients at high risk for cervical cancer. We follow and treat chronically ill patients such as those with Hepatitis C, and HIV/AIDS and, as we are able, spare post operative patients or patients with devastating neurological impairments such as Huntington's disease or spinal cord injuries the unnecessary burden of travel for care. We provide mental health services to patients in communities where previously no such services existed. We have procured robotic surgical tools that will allow

our urologic surgeons to collaboratively perform procedures both in our own operating suites and at other locations.

In conjunction with our community based partners, we offer services that include the long distance screening of patients for retinopathy, the major cause of blindness in patients with diabetes mellitus. Retinal images captured by a nurse trained to operate a specialized camera are electronically transferred to the interpreting ophthalmologist. We have recently procured a mobile digital mammography van configured to broadcast screening mammograms back to our radiologists for immediate interpretation and feedback to women in rural communities. We have tied this outreach program to a collaboration that will bring state-of-the-art screening for human papilloma virus, the cause of cervical cancer, and shared tumor boards and remote access to clinical trials for women in Appalachia. We have brought telehealth services to the Virginia-Kentucky fairgrounds in support of a massive outreach effort serving more than 3000 patients in one weekend. Technology allows us to provide quality care where such care is not otherwise available.

These same technologies allow us to broadcast thousands of hours of health professional and patient education, such as our grand rounds lectures, the CDC bio-terrorism lecture series, conferences and lectures specifically requested by health professionals in rural communities. We have broadcast patient education programs and offer courses for rural high school students that incorporate the rich resources of our University community.

Any of these initiatives can be replicated in international outreach. Lessons learned from the development of our domestic telemedicine program coupled with greater global deployment of broadband communications services have allowed us to step beyond Virginia to provide services in other countries. The mission of our University's Center for Global

Health is closely interwoven with that of our Telehealth program, and we have supported the delivery of clinical consultations and educational services in Europe, Africa, Central America, the Middle East, Asia, Australia and Canada. The Center for Global Health, through the NIH Fogarty Center programs, has provided mentored research opportunities for more than 80 international fellows. Those programs have continued as research collaborations enhanced by advanced communications technologies.

Since the inception of our program, UVA infectious disease specialists have provided telehealth facilitated HIV/AIDS care to patients in Virginia with well documented positive clinical outcomes. These same faculty, in partnership with the medical school at Makerere University in Uganda, the Infectious Disease Society of North America and colleagues from several other US universities have created an Infectious Disease Institute and HIV/AIDS training and clinical center in Kampala with funding from Pfizer and the Gates Foundation. Since 2002, training has been provided to more than 500 physicians from 21 different African countries. Through this initiative, thousands of patients have been treated with anti-retroviral therapies and receive careful monitoring for complications of both disease and drug treatment. Data from that project is transmitted via satellite facilitated broadband to Bethesda daily. Outside Kampala, ten rural clinics have been established with funding from The AIDS Support Organization (TASO). These clinicians have received training at Makerere, however, at those sites, the only source of connectivity is via telephone, dialup email or fax communications. This group now seeks to develop a telehealth clinical and educational network to further that effort.

The opening of one door has led to another. As a result of the exploration of HIV/AIDS telehealth enabled outreach projects in Africa, we have broadcast live-interactive

courses in environmental sciences that have linked UVA students and professors with their counterparts in South Africa, Mozambique and Botswana. Students at all universities connect with one another simultaneously and receive credit for their participation. UVA environmental scientists connect with research colleagues located in remote field stations in Botswana and Namibia. Just yesterday we participated in the launch of the new telemedicine center at Kuwait University.

We are one of four US telehealth programs along with HRSA's Office for the Advancement of Telehealth to annually host international visitors through a program sponsored by the US Telecommunications Training Institute (USTTI), a non-profit partnership between leaders of the U.S. information technology (IT), telecommunications, and broadcast industries and senior federal officials from the State Department and the Federal Communications Commission. Through this program, dozens of international healthcare and IT professionals seeking to explore the feasibility of establishing telehealth programs in their home countries have been trained in telehealth technologies.

We are actively working with our faculty to integrate telehealth into existing and expanding international humanitarian outreach projects such as "Helping Children Worldwide", a medical relief program serving children in Liberia and Sierra Leone, or the "Remote Area Medical Cervical Cancer and Women's Health project" in Guyana, where clinicians parachute into the rain forest to provide gynecologic care for hundreds of patients each year. Participating clinicians are regularly asked to treat patients with other ailments, and all these initiatives would be vastly enhanced by telehealth capabilities.

Colleagues from other academic medical centers have also used technology to enhance international outreach to include the remote support of operative procedures, the

provision of second opinion services that incorporate teleradiology and telepathology tools, the provision of care to indigenous peoples in the Amazon River basin operating from a riverboat equipped with satellite telemedicine technologies, or from such locations as a field station atop the Himalayas to name just a few.

Creating an infrastructure through which such projects may be developed and sustained remains a challenge, in part because of difficulties in securing funding and/or affordable bandwidth, and, in some locations, even electricity. Many of these projects have been established with satellite telephones and are powered by solar panels or car batteries in regions without connectivity or power. Today, wireless broadband technologies offer the additional the potential to leapfrog beyond terrestrial communications where such connectivity does not exist.

Rich repositories of innovative telehealth applications have evolved from Department of Defense and NASA supported research – innovations that can and have been replicated for non-military uses. Continued funding of these programs is imperative. The Department of Commerce has identified the export of US healthcare as a viable product to promote clinical services abroad; telehealth has been identified as a tool to enhance that strategy.

We respectfully propose the establishment of a federally funded international telehealth partnership and resource center that links HRSA's Office for the Advancement of Telehealth (OAT) with USAID and other key State Department programs, the CDC, the Department of Commerce and the Department of Defense telehealth research enterprise. Such a partnership, if linked to the United Nations and the World Health Organization to facilitate and support prioritized international healthcare outreach in a culturally sensitive collaborative process, has immense potential to help provide care to the forgotten and

disenfranchised, to track and respond to epidemics, and to positively export contemporary healthcare and educational services to the world's citizens in need. We have only begun to explore the role of telehealth in this process.

Thank you.